We claim:

1.   A method of operating an equalizer comprising:

5   continuously storing input data segments of received symbols in a decision feedback equalizer buffer at a symbol rate S;

        supplying output data sections of received symbols from the decision feedback equalizer buffer at an

10   output rate of nS such that void times separate the output data sections, wherein n > 1;

        equalizing the received symbols supplied by the decision feedback equalizer buffer in a decision feedback equalizer to provide equalized symbols;

15   decoding the equalized symbols by a decoder to provide decoded symbols;

        calculating adjustments for the decision feedback equalizer during the void times such that the adjustments are calculated based on both the received

20   symbols supplied by the decision feedback equalizer buffer and the decoded symbols; and,

        applying the adjustments to the decision feedback equalizer.

2.   The method of claim 1 wherein n = 3.

3.   The method of claim 1 wherein each output data section comprises first, second, and third portions, 5 wherein the first portion comprises received symbols repeated from a prior output data section, and wherein the second and third portions comprise the received symbols in a received data segment following the repeated received symbols.

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4.   The method of claim 3 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding 15 void time.

5.   The method of claim 3 wherein the method further comprises discarding the repeated received symbols at an output of the decision feedback equalizer.

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6.   The method of claim 5 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of

the next output data section following a corresponding

void time.

7.   The method of claim 6 wherein n = 3.

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8.   The method of claim 3 further comprising:

storing states of the decoder and the decision

feedback equalizer at the beginning of the third portion

of each supplied section; and,

10   restoring the states to the decoder and the

decision feedback equalizer at the beginning of the next

section supplied by the decision feedback equalizer

buffer.

15   9.   The method of claim 8 wherein the applying

of the adjustments to the decision feedback equalizer

comprises applying the adjustments at the beginning of

the next output data section following a corresponding

void time.

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10.   The method of claim 8 wherein the method

further comprises discarding the repeated received

symbols at an output of the decision feedback equalizer.

11.   The method of claim 10 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a

5   corresponding void time.

12.   The method of claim 11 wherein n = 3.

13.   The method of claim 1 wherein the decision

10   feedback equalizer comprises taps having tap weights, wherein the calculating of adjustments for the decision feedback equalizer comprises (i) estimating a channel impulse response based on the received symbols supplied by the decision feedback equalizer buffer and based on

15   the decoded symbols, and (ii) calculating the tap weights for the decision feedback equalizer based on the estimated channel, and wherein the applying of the adjustments to the decision feedback equalizer comprises applying the calculated tap weights to the decision

20   feedback equalizer.

14. A method of operating an equalizer

comprising:

continuously storing input data segments of

received symbols in a decision feedback equalizer buffer

5 at a symbol rate S;

supplying output data sections of received

symbols from the decision feedback equalizer buffer at an

output rate of nS such that void times separate the

output data sections, wherein n > 1;

10 equalizing the received symbols supplied by the

decision feedback equalizer buffer in a decision feedback

equalizer to provide equalized symbols, wherein the

decision feedback equalizer comprises taps having tap

weights;

15 decoding the equalized symbols by a decoder to

provide decoded symbols;

estimating a channel impulse response based on

both the received symbols supplied by the decision

feedback equalizer buffer and the decoded symbols;

20 calculating the tap weights for the decision

feedback equalizer based on the estimated channel,

wherein the estimating of the channel impulse response

and the calculating of the tap weights are performed

during the void times; and,

applying the calculated tap weights to the

decision feedback equalizer.

15.   The method of claim 14 wherein n $\geq$ 2.

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16.   The method of claim 14 wherein n = 3.

17.   The method of claim 14 wherein each output

data section comprises first, second, and third portions,

10   wherein the first portion comprises received symbols

repeated from a prior output data section, and wherein

the second and third portions comprise the received

symbols in a received data segment following the repeated

received symbols.

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18.   The method of claim 17 wherein the

applying of the adjustments to the decision feedback

equalizer comprises applying the adjustments at the

beginning of the next output data section following a

20   corresponding void time.

19.   The method of claim 17 wherein the method

further comprises discarding the repeated received

symbols at an output of the decision feedback equalizer.

20.   The method of claim 19 wherein the applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the

5   beginning of the next output data section following a corresponding void time.

21.   The method of claim 20 wherein n = 3.

10   22.   The method of claim 17 further comprising:

storing states of the decoder and the decision feedback equalizer at the beginning of the third portion of each supplied section; and,

restoring the states to the decoder and the

15   decision feedback equalizer at the beginning of the next section supplied by the decision feedback equalizer buffer.

23.   The method of claim 22 wherein the

20   applying of the adjustments to the decision feedback equalizer comprises applying the adjustments at the beginning of the next output data section following a corresponding void time.

24. The method of claim 22 wherein the method

further comprises discarding the repeated received

symbols at an output of the decision feedback equalizer.

5   25. The method of claim 24 wherein the

applying of the adjustments to the decision feedback

equalizer comprises applying the adjustments at the

beginning of the next output data section following a

corresponding void time.

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26. The method of claim 25 wherein n = 3.

27. A method of operating an equalizer

comprising:

15   supplying segments of received symbols to the

equalizer to produce equalized segments, wherein each of

the segments of received symbols occupies a corresponding

segment time period;

decoding the equalized segments by a decoder to

20   produce decoded segments;

calculating adjustments for the equalizer based

on n decoded segments and n segments of received symbols,

wherein n ≥ 1, and wherein the calculating of adjustments

is performed in a pipelined manner at least twice per

segment time period; and,

applying the adjustments to the equalizer.

5   28.   The method of claim 27 wherein n = 3.

           29.   The method of claim 28 wherein the

calculating of adjustments comprises:

           calculating a first set of adjustments based on

10   data in segments time periods one, two, and three; and,

           calculating a second set of adjustments based

on (i) data in only a latter portion of segment time

period one, (ii) data in all of segment time period two,

(iii) data in all of segment time period three, and, (iv)

15   data in only a beginning portion of segment time period

four.